Environment Safety & Occupational Health

Sustain Readiness
Be a Good Neighbor
Leverage Resources

Top: Brig General Billy Mitchell
Randolph Advertising Art;
Courtesy, United States Air Force
Art Collection
Bottom: Wings of Time
Robert E. Bell; Courtesy, United
States Air Force Art Collection.

"Change in the world around us requires change in the Air Force"

Global Engagement

Department of the Air Force
Washington, DC

This document sets forth the United States Air Force's vision for Environment, Safety, and Occupational Health (ESOH), August 1998. This vision describes how the execution of ESOH programs supports and enhances the Air Force's defense of the United States through control and exploitation of air and space.

There are three *ESOH Principles*: Sustain Readiness, Be a Good Neighbor, and Leverage Resources. These principles support *Global Engagement: A Vision for the 21st Century Air Force,* which outlines our continuing commitment to provide America the air and space capabilities required to deter, fight and win. These principles support the Air Force's core values of "integrity, service before self, and excellence in all we do." These principles outline how we interact with diverse stakeholders with *integrity*, *serve* the needs of our environment and of our personnel, and strive for *excellence* by improving productivity and reducing costs.

Each ESOH principle makes an important contribution to the mission and affects our ability to train and fight. Air Force leaders need to understand these concepts and how they affect Air Force business decisions. The margin of success today and in the future might well depend on the understanding by all that every aspect of our mission and every system has human and environmental impacts.

This document provides an overview of these important principles and the role they play as we strive to shape the Air Force of the 21st Century.

Michael E. Ryan
General, USAF
Chief of Staff

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Acting Secretary of the Air Force

Introduction

The strategic vision in Global Engagement addresses the entire Air Force—people, capabilities and infrastructure—and charts the course of the Air Force into the first quarter of the 21st century.

This document, ESOH Principles, describes how the people in the Air Force's ESOH communities are using innovative approaches and methods to help realize the vision of the 21st century. It is organized around the three guiding principles of Sustain Readiness, Be a Good Neighbor, and Leverage Resources described in the SecAF and CSAF Memo, March 13, 1995: ESOH Initiatives.

Sustain Readiness

Safety and Health

The Air Force's Occupational Safety and Health Program sustains readiness by protecting every worker's health and safety in peacetime as well as in all levels of conflict. History shows that non-battle casualties greatly exceed battle casualties. In the future military as we have fewer people, each individual will have greater impact on the outcome of the conflict than ever before. A warfighter who is healthy and safe is more productive, effective, and efficient. The Air Force sustains readiness by ensuring safety and health through risk management, healthy communities and individual readiness.

Operational Risk Management

The Air Force has established and implemented an Operational Risk Management (ORM) program. Its primary intent is to provide Air Force decision makers a systematic step-by-step process to provide for the assessment of risks associated with all tasks and missions. An accurate assessment enables commanders, supervisors, and individuals to devise methods to eliminate or minimize ESOH risks. It provides a means of quantifying relative risk in an operation and making prudent "go" or "no-go" decisions.

More importantly, ORM creates a mindset fostering a continuing awareness of risk and corresponding action to control or minimize its effects. The risk management process is expected to yield dividends in a number of areas, including enhancement of mission accomplishment as well as safety in all activities. The Air Force is providing education, finalizing command program implementation guidance and publishing an Action Level Users Manual.

An "activity" includes anything from cleaning the inside of a fuel tank to flying a mission. The ORM program provides a process of reducing or offsetting risk by encouraging communication up and down the line and enabling supervisors and commanders to make well-informed decisions that will ensure mission success.

The Air Force Safety community is studying the underlying causes of injuries and conducting trend analyses to identify solutions to the most serious and common accidents.

The Bird Aircraft Strike Hazard (BASH) Program seeks to prevent accidents caused by collisions with birds. Air Force Safety is improving the use of BASH for prevention, to investigate accidents, and to increase education concerning bird hazards.

The Base Explosive Exception Matrix (BEEM) Weapons Safety Process identifies, prioritizes, and helps the Air Force correct situations where explosives are stored near working and living areas. The program helps to ensure stored weapons do not pose a threat to Air Force personnel and surrounding communities.

Healthy Communities

The AF Occupational Safety and Health (AFOSH) Program has an active health surveillance program to reduce worker risk. This program tracks morbidity, mortality, and disability, and identifies ways to improve the workplace environment and reduce health threats from sources such as chemicals, radiation, and noise. The AFOSH program, in conjunction with pollution prevention and technology transfer, focuses on eliminating hazards from the work environment. If elimination is not feasible, then the program uses Operational Risk Management and engineering changes in the working environment, life support equipment, personal protective equipment, health education and surveillance, and health promotion and

"It is the professionalism and dedication of our people that makes the Air Force the preeminent air and space force to meet the nation's needs."

Global Engagement

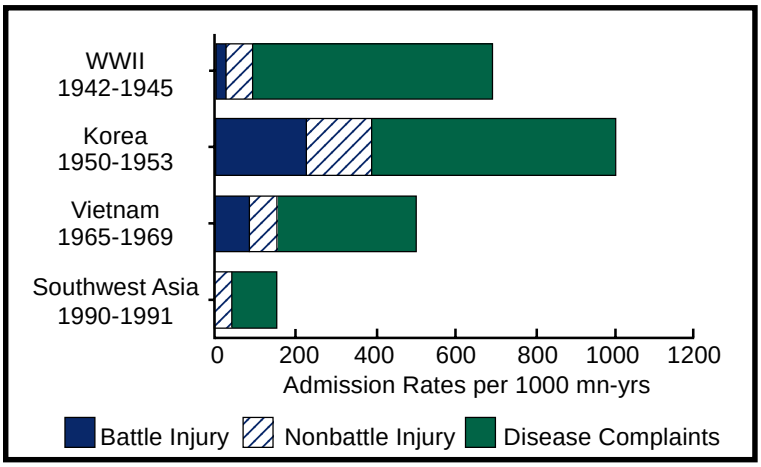
fitness programs to reduce occupational injuries and illness.

The Hearing Conservation Program is one example of an AFOSH program. Over 200,000 personnel are exposed to hazardous noise levels on the job and as a result are enrolled in this program. The program protects personnel from the harmful effects of noise by evaluating workplaces, reducing noise through engineering changes, providing hearing protection and performing medical surveillance to identify early signs of hearing changes. One key part of the program is education and training. A responsible worker will recognize the importance of the proper use of personal protective equipment and will know what steps can be taken to eliminate or reduce noise hazards.

AFOSH programs create a safe and productive work environment by reducing or eliminating risk to the worker from all chemical, physical, and biological exposures.

We believe the Air Force maintains the best occupational safety and health programs in DoD. In Fiscal Year 96 for example, expenditures on worker's compensation claims decreased by 2%, representing a cost avoidance of over $2 million.

Causes of Wartime Hospital Admissions *



Source: Injuries in the Military, A Hidden Epidemic, A Report for the Armed Forces Epidemiological Board, November 1996

Individual Readiness

Historically, disease and non-battle injuries (DNBI) cause more wartime hospitalizations than combat wounds. Protecting the force from both traditional and unconventional hazards is critical because every individual plays an increasingly important role in mission success. In recognition of these facts, the Air Force is institutionalizing Force Enhancement and Medical Force Protection to reduce DNBI.

Force Enhancement is a program to maximize the mental, physical, and technical capabilities of all Air Force people for sustained performance in both hostile and friendly environments. This program encompasses wellness, quality of life, and ESOH programs. Force enhancement supports mission success by improving the health and vitality of our people.

Medical Force Protection is a program to protect our forces from food and waterborne illness; and chemical, biological, and industrial hazards. This program includes a medical surveillance system for early identification of injury and illness trends. Medical personnel characterize the health and safety risk from these factors and provide risk information to the commander as an input to mission decisionmaking.

The protection of our personnel from traditional peacetime and indigenous occupational safety and health hazards during deployments is critical to mission success and long-term personnel health.

Failure of our people to operate at peak performance translates into decreases in force productivity and readiness. For example, cockpit analysis improvements ensure we match pilots to an aircraft most compatible with the pilot's physical size. Scientists are matching the body size of the pilots to the cockpit dimensions to improve safety and pilot effectiveness. These improvements will be standard practice when the Air Force moves to a new generation of training, cargo, and fighting aircraft in the 21st century.

The Advanced Tactical Anti-Gravitational Suit (ATAGS) developed at Brooks AFB is the most significant improvement in the anti-G suit since World War II. The suits, which pilots wear like trousers, provide compression to the lower body to lessen the effort required for the pilot to remain conscious when experiencing high G forces. In fighter aircraft, particularly in combat, less fatigue translates into a more effective war fighter with less risk of injury due to mishap and greater potential for mission success.

The Air Force seeks to maximize the ability of our personnel to perform at high levels for sustained periods. The medical community plans a number of initiatives involving human factors, medical surveillance, and pre-deployment preparations to support this effort. It is instituting an aggressive investment strategy that implements programs to both reduce the hazards affecting our people and to increase our operational capability.

"People are at the heart of the Air Force's military capability, and people will continue to be the most important element of the Air Force's success in capitalizing on change."

Global Engagement

Maintaining Range, Airspace and Installation Access

Access to ranges, airspace and installations is crucial to Air Force readiness. Our test and training ranges and airspace are absolutely essential to both acquiring

weapon systems and training our aircrews to prevail in combat.

Air Force ranges are national assets. They encompass approximately 9 million acres of land and several million square miles of airspace where aircrews train and/or test air-to-ground and air-to-air tactics, electronic warfare, joint scenarios with other services from the United States and abroad, and new weapons. The same areas used to sustain readiness are also considered some of the most ecologically important of all federal lands based on wealth of biological resources, pristine quality and natural diversity.

We have a covenant with the American people. They have entrusted us with priceless natural and cultural resources on our installations and ranges. We fulfill our stewardship responsibilities in this agreement through Conservation and Compliance.

Conservation

Conservation preserves the long-term environmental viability of our training assets. The Air Force will continue to strengthen its conservation program through sound ecosystem management focused on maintaining biodiversity while preserving necessary training and operations functions. Biodiversity refers to the variety of life and the processes that sustain life. Biodiversity is important because, in the broadest sense, it provides the basis for our existence on a living planet. We use comprehensive ecosystem management to restore and maintain biodiversity and environmental viability.

The Air Force has nearly completed biological and wetland inventories of its installations. The Air Force cultural resources inventories are more than 80% completed. Plans to conserve the natural and cultural resources at Air Force installations are more than 70% complete. Through *Conserving Biodiversity on Military Lands: A Handbook for Natural Resources Managers,* the Air Force is implementing conservation principles. As the DoD executive agent for developing the handbook, the Air Force played a key role in bringing together the efforts of The Nature Conservancy and other conservation organizations. To implement the handbook, the Air Force has worked in cooperation with the Nature Conservancy to develop a workshop for DoD natural resource managers which provides practical guidance on biodiversity conservation and ecosystem management. Additional studies

to characterize the biodiversity of the Sonoran and Mojave Desert Ecoregions will help the Air Force sustain the Goldwater and Nellis Ranges.

Compliance

Compliance with governing ESOH regulations is fundamental to all Air Force activities and integral to readiness. Every supervisor must provide a safe and healthy workplace and must comply with all environmental regulations. The Air Force Compliance goal is to have no enforcement actions from regulatory agencies. We have had great success in environmental compliance—open enforcement actions have fallen dramatically from 248 at the beginning of FY93 to only 14 at the end of FY97.

The Civil Engineer is shifting emphasis to compliance through pollution prevention. Pollution prevention solutions are designed to reduce overall long-term costs and improve productivity while achieving compliance.

Operations and Environmental offices are working together as an interdisciplinary team to ensure compliance with the National Environmental Policy Act and access to training ranges. For example, the Goldwater and Nellis training ranges contain two thirds of the land entrusted to the Air Force. Currently, the Air Force is conducting an extensive environmental analysis in preparation for renewing our authority, which expires in 2001, to use the ranges. We are also working with interested parties to build sound ecosystem management programs on both ranges. We seek authorization for indefinite access to these important ranges predicated on our commitment to ecosystem management, community involvement, and other management projects.

Be a Good Neighbor

Being a good neighbor will be critical to the success of the 21st century Air Force and communication is at the heart of being a good neighbor. A constructive relationship with our neighbors in which they understand the Air Force goals, objectives and constraints, and through which we understand theirs, is the foundation of trust. Trust is crucial to resolving differences in a reasonable way.

Each Air Force installation seeks to be a responsible neighbor, to be sensitive to community interests and concerns, and to be an active participant in programs to improve the local quality of life. Two aspects of being a good neighbor are cooperative relationships and cleanup.

Cooperative Relationships

New and innovative relationships with regulatory and public stakeholders are a crucial part of the ESOH vision.

We are working closely with EPA and state partners to seek common sense ways to achieve common goals. Our ENVironmental inVESTment (ENVVEST) initiative at Vandenberg AFB, CA resulted in the first formal project agreement in DoD. In the project agreement, the commander agrees to redirect $2.5M of funding from permitting costs to new projects that will reduce air pollution by 10 tons per year. In return the Air Force receives permanent relief from requirements to obtain various permits. ENVVEST agreements are an important cooperative step toward sustaining both the community and the Air Force operations. Another ENVVEST agreement is in the works at Elmendorf AFB, AK with a similar payback in reduced pollution at the same or lower cost.

Another success has been the award-winning Texas Pollution Prevention Partnership. In this partnership the Air Force has joined with Texas, EPA, and the other services to develop a program committed to information exchange, reinventing the pollution prevention culture, and regulatory innovation projects. We are investigating similar partnering arrangements for every installation. The Air Force is the lead service for this national partnership model.

The public has asked the Air Force to be a good neighbor by looking at where and when flight operations are conducted for training purposes. In some areas, people are seeking a

wilderness experience free of aircraft noise. The Air Force recognizes that airspace use has many dimensions. For example, time of use is a factor that can sometimes be controlled as shown at Big Bend National Park, Texas. Park officials and users reported noise and visual impacts from T-38 jet aircraft flying between 500 and 1,000 feet above ground level near a popular campground. The Air Force changed flight operations to reduce impact during the most popular time for visiting and camping in the Park.

Cleanup

Part of being a good neighbor is to reduce the present impact of past contamination and to complete cleanups based on sound science and a dialogue with the community. The Air Force has remediated or found no further action required in 2,474 out of 4,297 cleanup sites. Just over 1,800 sites still require action, and this year our focus continues to move from studying site problems to cleanup and closure. We currently use over 75% of program funding directly for cleanup.

Two years ago we participated in a national discussion on cleanup called the Federal Facilities Environmental Restoration Dialogue Committee (FFERDC). We have incorporated this Committee's recommendations into Air Force Policy, creating a firm foundation for a Community Based Environmental Program (CBEP).

One FFERDC recommendation was establishing Restoration Advisory Boards (RABs) as a way of communicating with the public and other stakeholders. These partnerships are important because they lay the groundwork for mutual trust and sharing of information. RABs are an open forum for the exchange of information between installation officials; members of the local community; the U.S. Environmental Protection Agency; and state, local, and tribal governments. RABs give communities affected by site cleanup a voice in these important decisions. RABs increase community understanding of the Air Force's cleanup objectives and the complex regulatory requirements under which the Air Force must conduct cleanups. RABs also increase Air Force understanding of community concerns. The Air Force has 88 RABs at 118 installations.

The experience gained from RABs points the way to even broader discussions with our community neighbors in other ESOH areas. This discussion is taking place at some locations in Community Advisory Boards (CABs). CABs are committees of local community people that would consider pollution prevention, compliance, and community health in addition to cleanup issues.

"The Air Force has long recognized the importance of responsible stewardship of taxpayer dollars and will strive to achieve the highest standards for efficiency."

Global Engagement

Leverage Resources

In the future the Air Force will face increased competition for limited funding and personnel. Understanding program costs will be essential to our future decision making. The cornerstone of leveraging resources is understanding ESOH costs. ESOH requirements imbedded in every task we perform in the Air Force increase costs and reduce productivity. For example, worker training to handle hazardous materials, physical examinations, and worker compensation reduce productivity and increase costs. Industry estimates the direct and indirect program costs for ESOH are as high as 20% of operation and maintenance costs. Once the costs are understood, leaders will implement programs to minimize those costs while producing the same quality and quantity of output.

ESOH professionals are leveraging resources to reduce and eliminate ESOH costs by using new technology, by working better together, and by developing libraries of more effective and efficient business practice alternatives.

Pollution Prevention

One key element of our effort is the Pollution Prevention Strategy. The Strategy outlines objectives pertaining to worker training and awareness, installation pollution prevention, weapon system pollution prevention, and how to use technology. The Chief of Staff and the Secretary signed the Strategy in a memo to the major commands on July 24, 1995.

Pollution Prevention Awareness

The first objective of the strategy is to make every employee aware of a pollution prevention ethic through comprehensive education and training. Educated workers who take responsibility for the processes where they work and understand the ESOH impact are in the best position to bring about change.

The Air Education and Training Command has taken the lead to train and empower workers through a Pollution Prevention training program given to individuals after they arrive in their shops. Not only has the 'shop-level' training increased the identification of pollution prevention solutions, but it has also increased worker satisfaction and sense of ownership. Air Combat Command and others have begun similar programs.

Weapon System Pollution Prevention

Pollution prevention should be a regular part of every step in the weapon system life cycle ("Life cycle" means concept, design, development testing, production, deployment, training, maintenance, supply management, distribution, and disposal or demilitarization). Every weapon system program manager must consider the cost of pollution as part of his/her normal decision making. We want to enhance the linkage between those offices that are affected by occupational illness and injury and the costs associated with ESOH

"All support activities will be run more like businesses, using the best practices gleaned from top performers."

Global Engagement

compliance, and the system program offices that design and change the processes themselves. If the system program office understands the entire ESOH cost the process creates for the Air Force, then that office will be able to make better business decisions.

We have developed the Hazardous Materials Reduction Prioritization Process (HMRPP) to link the installation user, who must pay for compliance requirements and waste disposal, with the system program office that has the authority to make system changes. The initial process has identified over 120 requirements that single managers and major commands are now considering.

The C-17 program has a compelling story of how pollution prevention can reduce cost and improve performance. Each C-17 uses over 730,000 rivets and 590,000 titanium pins. In the past before installation of each rivet and pin, the mechanic coated the rivet with a sealant. The sealant had to be refrigerated 5-30 minutes before use. Each sealant tube cost about $5 to buy and $10 to dispose of as hazardous waste. The mechanics met with the suppliers and developed a dry pre-coated sealant. The new pre-sealed fasteners filled the hole tighter, ensured corrosion protection, simplified the installation process, and eliminated hazardous waste. The estimated savings from this improvement are $2.2M for each new Globemaster.

The system program offices for new weapon systems are considering ESOH in the development and

sustainment of weapon systems. The Air Force is also partnering with other services both to benchmark and to share lessons learned, e.g., through the Joint Group on Acquisition Pollution Prevention (JG-APP) and the Technology Needs Survey (TNS).

Installation Pollution Prevention

This objective is to make pollution prevention a regular part of all we do to manage our installations. We are seeking to refocus Air Force programs to compliance through pollution prevention. The Air Force has been very successful ensuring that we are in compliance with various regulations; however, most of our emphasis in the past has been on regulating discharges of pollution. As we shift our focus to pollution prevention, we will be eliminating pollution at its source—where the work is done.

There are many examples of how installation pollution prevention reduces costs and achieves compliance. For example, the requirement to obtain Title V air permits is based on an installation's emissions. Replacing older, less efficient equipment with new, low-emission equipment can eliminate the need for a permit.

Using Technology

The final objective of the Pollution Prevention Strategy is to develop and transition new technology for use in new and existing systems to reduce pollution and improve performance.

Workplaces can use technology to reduce pollution, improve performance, protect worker health and safety, and/or reduce costs if they are aware of the existence of that technology. We are improving our awareness of such technologies and sharing that information with the workplace.

We have a team that is improving the process of identifying and fielding readily available solutions. We are also working with other federal agencies to compile a directory of technology requirements as well as a directory of available technologies. We believe this will help create the markets necessary for industry to invest in these pollution prevention areas.

We have world class toxicologists who are evaluating Air Force-unique chemicals to identify less toxic and hazardous chemicals that will do the job and protect our neighbors and our workforce.

Management Systems

The key to leveraging resources is to make the best spending choices to avoid pollution and eliminate health hazards, while reducing costs and improving performance. This creates a process for making business decisions to provide a maximum return on investment while supporting the mission. Air Force business decisions (e.g., using our Planning, Programming, and Budgeting System) should adequately consider the true cost of hazards borne by our workers and communities and the true cost of pollution. Clearly, to develop a smart investment strategy, we need to link the weapon system and the operational communities in the effort to design out ESOH hazards as well as to develop supporting cost accounting data and tools to analyze costs.

Cost accounting systems and analysis tools, however, are not enough. We are looking at our overall ESOH management system to ensure it incorporates a cycle of plan-implement-check-review.

Two important aspects of this program are the Hazardous Material Management Program and the Modernization Planning Process.

Hazardous Material Management Program

The Air Force recently developed instructions for managing hazardous material. Hazardous material will be controlled at all installations like drugs are controlled through a medical pharmacy. Every use of hazardous materials must be authorized in terms of both the specific substance and quantity issued. Additionally, Air Force personnel must be trained in the proper use of hazardous materials.

These instructions spell out how Civil Engineering, Medical, Safety, Supply, Maintenance, Acquisition, Leadership, and others will work together to manage the acquisition, use, and disposal of hazardous materials. A data collection system will enable installations and major commands to reduce our reliance on costly hazardous materials.

Technical Planning

From 1995 to 1997 the Air Force re-engineered the Technical Planning for ESOH that supports Air Force Modernization Planning Process. The Technical Planning Integrated Product Team (TPIPT) identifies and collects validated near- and long-term needs, finds and assesses solution options, and offers integrated solutions to customers for use in Air Force planning. Both the Civil Engineering and Medical communities have made these solutions an integral part of their planning and programming strategy.

More information on the TPIPT and the requirements it has identified are available on the internet at http://xre22.brooks.af.mil/.

Conclusion

Global Reach - Global Power prepared the Air Force to deal with the challenges of the transition era following the Cold War. *Global Engagement: A Vision for the 21st Century Air Force* charts a course to take the service beyond this transitional period and into the future.

ESOH Principles explains how we are updating our ESOH program to match the demands of the next century. *ESOH Principles* charts a course of integration of ESOH into our core business practices through better understanding of ESOH costs and alternatives.

As we enter the 21st century we will face tough choices. *ESOH Principles* will help the Air Force make better business decisions by bringing to bear the power of our people and technology, and by engaging the support of our neighbors, the American people.

Environment, Safety, and Occupational Health are important tools to build the world's most respected air and space force...global power and reach for America.

"Air Force people building the world's most respected air and space force...global power and reach for America."

Air Force Vision

Top: Wings of Time
Robert E. Bell; Courtesy, United States Air Force Art Collection
Bottom: A Night Launch from Pad 39 B; Lt Col Eileen M Collins, USAF, first female NASA Astronaut to pilot a space shuttle, SCS 63 Discovery
Kenrad F. Hock; Courtesy, United States Air Force Art Collection.

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